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DURHAM, N.H. -- A newly-established research and development center at the University of New Hampshire is tackling the largest threat to water quality nationwide - stormwater carrying nonpoint source pollution into streams, wetlands and coastal harbors.

*CSTEV workshops support municipal managers, engineers, and others charged with developing and implementing stormwater management plans. The field facility is equipped with conventional stormwater treatments, low impact development designs, and manufactured devices such as manhole retrofits.*

The Center for Stormwater Technology Evaluation and Verification (CSTEV) is a groundbreaking program that provides rigorous scientific field testing and demonstration of stormwater treatment technology funded by the Cooperative Institute for Coastal and Estuarine Environmental Technology (CICEET), a partnership between the National Oceanic and Atmospheric Administration and UNH. CSTEV offers workshops in support of municipal managers, engineers and others charged with developing and implementing stormwater management plans.

"There are many designs and processes that claim to achieve desirable water quality and storm volume reduction, but few have had the benefit of independent scientific testing," says Robert Roseen, CSTEV co-director and UNH research engineer. "CSTEV tests these treatment systems side-by-side, so we can make accurate comparisons, verify their effectiveness, and pass this information on to stormwater managers."

One might imagine the source of water pollution to be something specific, such as a town's sewage outfall pipe, but often the culprit cannot be pinned down so neatly.

Stormwater runoff carries pollutants such as sediments, fertilizer, animal waste, pesticides, pathogenic bacteria, oil, heavy metals, and toxic chemicals from locations as diverse as homes, factories, farms, and malls directly into water bodies. Impervious surfaces pave the way. Parking lots, roads, buildings, and compacted soil generate significantly more runoff than permeable soil, making pollution control in urban and suburban areas challenging.

The impact of nonpoint source pollution is profound. According to the National Resources Defense Council, it caused more than 12,000 closures and advisories at U.S. ocean and freshwater beaches in 2003. The Environmental Protection Agency reports that nearly 40 percent of water bodies surveyed nationwide have been compromised.

Medical costs associated with eating sewage-contaminated shellfish range from $2.5 million to $22 million annually. So pervasive is the problem of nonpoint source pollution that Phase Two of the Clean Water Act mandates stormwater managers to tackle this challenge head-on, yet often they lack the information they need to make critical decisions.

“We hope the independent testing CSTEV provides will help put New Hampshire ahead of the curve in terms of stormwater management,” says Ridgely Mauck from the state’s Department of Environmental Services. “The testing results will help make all of us aware of different technologies and their efficiency at specific pollutant removal which will allow new developments to employ the most effective stormwater treatments, and protect water quality.”

The CSTEV facility is equipped with conventional stormwater treatments such as swales and ponds, in addition to low impact development designs and manufactured devices. These devices include a sand filter, a bioretention system, a gravel wetland, a detention pond, a swale, infiltration and filtration devices, and manhole retrofits. CSTEV is working with a variety of manufacturers whose treatment systems are represented at the center.

“To have a third party, scientific evaluation of our system that compares us with our colleagues is a unique opportunity; I’m not aware of another program in the country that does this,” says J Kelly Wlliamson, owner of stormwater treatment systems firm Aquashield, Inc. ”We’re looking forward to the qualitative and quantitative assessment of our technology.”

Two field projects—a porous pavement parking lot and a street vacuuming study—seek to treat and minimize stormwater at the source, rather than after it is collected and channeled.

“People think of stormwater as waste rather than a resource—it has become convenient to just let it go, channel it out,” says Roseen, “but water that is drinkable, swimable, and fishable is at premium everywhere. We have to start engineering ways to rehabilitate stormwater so that it can replenish our aquifers, springs, and streams.”

**A digital photo is available at the Web site:**
**http://www.unh.edu/news/img/marine/stormwater.jpg**
**Caption: CSTEV workshops support municipal managers, engineers, and others charged with developing and implementing stormwater management plans. The field facility is equipped with conventional stormwater treatments, low impact development designs, and manufactured devices such as manhole retrofits.**